of the likelihood of auto-infection occurring in cases of chronic gonorrhœa.

CONCLUSIONS. (1) The gonococcus either alone or as a primary infecting agent plays a much more important role in the production of puerperal fever than is usually appreciated by most observers; (2) various microörganisms especially the streptococcus and Bacillus coli are usually present about the vaginal outlet, although apparently infrequently found in the upper part of the vagina of the healthy woman. These organisms are ever ready to attack the tissue whose resistance has been destroyed by the action of the gonococcus. As corollaries there follow (*a*) the necessity for the most careful examination of the history of the patient and of the vaginal discharge early in pregnancy in all cases presenting the least grounds for suspicion; (*b*) the necessity for more than ordinary caution in examining externally all pregnant women presenting even the slightest evidence of an inflammatory condition.

I wish to express my thanks to Dr. F. A. L. Lockhart for use of cases in the Montreal General Hospital, as well as the physicians of the Montreal Maternity Hospital for notes upon cases in that institution. I wish also to thank Dr. C. W. Duval for numerous suggestions from time to time.

A NEW METHOD OF STAINING THE DIPHTHERIA BACILLUS.

By Wm. H. Rush, A.M., M.D.,
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The following are the materials required in a new staining procedure: Grübler's methylene blue; Grübler's eosin, "W. G.," or "rein;" tartaric acid; alcohol, 96 per cent.; and distilled water.

The solutions should be prepared as follows:

(*a*) Saturated aqueous solution of methylene blue, filtered, 10 c.c.; tartaric acid, 10 per cent. aqueous solution, 10 c.c.; distilled water, 80 c.c.

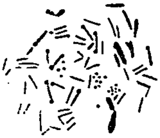
(*b*) Tartaric acid, 10 per cent. aqueous solution, 10 c.c.; alcohol, 96 per cent., 50 c.c.; distilled water, 40 c.c.

(*c*) Eosin, saturated aqueous solution, filtered, 1 c.c.; distilled water, 199 c.c.

Stain thin films—on a coverglass or slide, fixed by the flame in the usual way—ten seconds in *a;* wash ten seconds in *b;* stain ten seconds in *c;* blot and dry. The solutions *b* and *c* should be poured on freely. Drying or washing in water between the different steps is unnecessary.

The polar bodies will be stained deep violet-blue; the remainder

1



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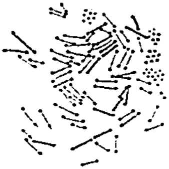

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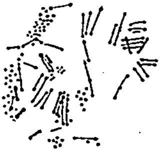

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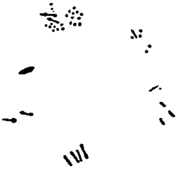

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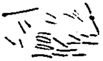

Fig. 1.—Two hours' culture; a combination of portions of two fields.

Fig. 2.—Fourteen hours' culture.

Fig. 3.—Twenty-one and one-fourth hours' culture.

Fig. 4.—Ten days' culture.

Fig. 5.—Smear direct from nasal discharge.

The figures were drawn with camera lucida, Zeiss $\frac{1}{12}$—4.

of the bacillus and all other microörganisms that I have observed, with the exceptions mentioned below, intense pink (Figs. 1, 2, 3, 4, and 5). Tissue elements, fibrin, mucus, etc., in case of films direct from the throat or nose, also are stained pink.

I have tried all the easily obtainable organic acids, as well as propionic and butyric, with the above stains, in a great variety of proportions and combinations, and have fixed upon the method described as the most suitable. Butyric acid, substituted for tartaric in solution *a*, and used in simple 1 per cent. aqueous solution in place of *b*, gives somewhat better results than tartaric acid as in the above formula. But the disgusting odor of butyric acid renders its use impossible, except in isolated laboratories.

The method has wide working limits, both as to the composition of the different solutions and as to the timing of the different steps in the process of staining. Solution *c*, however, must not be used too long or too strong.

I have tried this method many times, have controlled it by the stains of Löffler, Neisser, and Hunt, and have confidence in its reliability. I have successfully stained the bacillus from cultures of all ages between the limits of two hours and ten days. The appearance of the bacillus may be best comprehended by reference to the accompanying illustrations.

Staining Properties of Other Bacteria. Many cocci, of various habits of growth, occasionally show a more or less distinct blue central portion. The strong contrast-stain easily reveals their true morphological character. I have found a few species of leptothrix which show metachromatic granules with this stain and with Löffler's, but not with Neisser's stain. The relatively small granules and the coarse filaments or segments ought to make confusion of this form with the bacillus of diphtheria impossible.

Bacillus Pyocyaneus. I was furnished a pure culture of this organism by Dr. Simon, of the City Bacteriologist's Laboratory, who isolated it from a case of gangrenous appendicitis. Companion smears of this culture, stained by the method herein presented, and by the methods of Löffler and Neisser, all show here and there a bacillus with one or two metachromatic granules, precisely resembling a diphtheria bacillus of the short variety. The same is true, as pointed out to me by Dr. Simon, of smears stained with thionin blue. Its occurrence and mode of growth exclude the possibility of a mistake in diagnosis.

Pseudo Bacillus. I have examined a number of strains of this group of organisms, sent me in pure culture by Dr. Alice Hamilton, of the Memorial Institute of Chicago. They stain as follows:

1. Obtained from the throat of a diphtheria convalescent. A few bacilli show metachromatic granules, when stained by the method of Neisser, also with methylene blue and eosin according to the above formula; none, however, with the butyric acid modification.

2 and 3. Scarlatinal otitis media. No metachromatic granules by any method used.

4. Scarlatinal otitis media. A few bacilli show metachromatic granules with Neisser's stain and with methylene blue and eosin.

5. Chronic otitis media. A few metachromatic granules with Neisser's stain, none with methylene blue and eosin.

6. Postscarlatinal otitis media. A few metachromatic granules with Neisser's stain and with methylene blue and eosin.

Staining of Smears Direct from the Throat or Nasal Discharge. In the examination of 20 cases, 13 positive, 7 negative, my findings agreed with those obtained from the corresponding cultures. In one case which I reported as doubtful, the first culture showed no bacilli at eighteen hours' incubation. A second culture, obtained fifteen hours later, showed a very few diphtheria bacilli after twenty-four hours' growth. I do not, however, advocate reliance upon the direct examination, except in positive cases.

The advantages of the suggested staining method are: Accessibility of the necessary reagents; ease of preparing the staining solutions; wide working limits; and striking and characteristic appearance of the organisms when so stained.

THE NATURE OF POSTOPERATIVE FEMORAL PHLEBITIS.

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In looking up the subject of postoperative phlebitis, I have been impressed with the lack of definite classification of the different cases. The fact is that in most of the current literature and in most text-books the terms phlegmasia alba dolens, thrombophlebitis, phlebitis, and thrombosis, relating to the femoral vein, are used synonomously. One author[1] says that when phlebitis is in the femoral or iliac veins the disease is known as phlegmasia alba dolens. Another author[2] states that thrombosis of the femoral veins is the same as that described in text-books under the name of phlegmasia alba dolens. Kaufman[3] says that phlegmasia alba dolens is a thrombophlebitis retrograde from the iliac to the femoral vein.

It is doubtful whether these definitions are quite accurate, and it is my purpose to show that sufficient differentiation has not been made in the description of the postoperative complications grouped under the headings of phlebitis, thrombosis, and thrombo-

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[1] International Text-book of Surgery, 1899, vol. i, p. 892.

[2] Johnson, Surg., Gyn., and Obst., iii, p. 111.

[3] Specielle Pathologie, p. 93, 4th edition.